

MONTHLY JOURNAL OF
THE MUSHROOM GROWERS'
ASSOCIATION

MGA

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Tib. 205

DO YOU SHORT COMPOST?

Whether you do or not, the following facts are of interest. Normally this method is only associated with stable manure but an enterprising grower decided to try it with wheat straw, water and Shirley Activator. After 7 days composting, during which time 3 turns were made, the house was filled. The physical condition was excellent, so a sample was taken and sent for analysis. The result was :—

Moisture	77.2%
pH	7.6
Results on dry basis :			
Total Nitrogen	...		2.72%
Soluble Nitrogen67%
Ammoniacal Nitrogen			.43%
Albuminoid Nitrogen			.03%

In such a short period the aerobic composting had converted practically 25% of the organic nitrogen to a soluble and available form. As the vegetable protein of the straw would be the slowest, the microbial protein (which is the basis of the nitrogen content of Shirley Activator) must have exceeded this percentage.

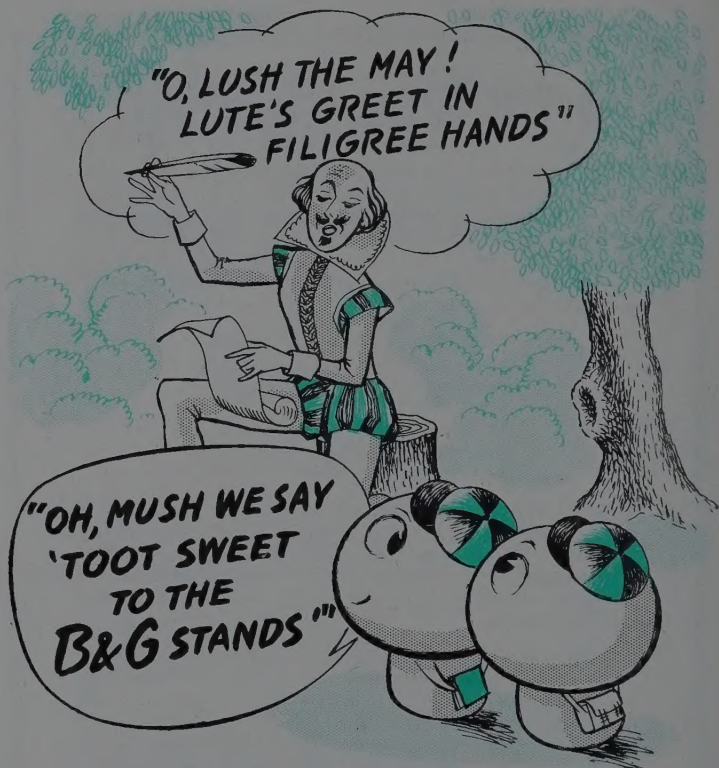
It is too early to give final results but the grower writes "The short composted one has had a most terrific spawn run that has ever been seen." It is of course only by experiments of this nature that progress is made. We are very pleased to say that most of the growers using Shirley Activator, whether with straw or stable manure, are very pleased with the results obtained. Our Mr. V. L. Barrow, B.Sc.(Agric.), N.D.A., will be very pleased to supply full information to any interested grower. Remember it is only by trying Shirley Activator yourself that you will learn how much it can improve your composting and cropping.



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EDITORIAL

ENOUGH ROPE ?

The submission of the National Agricultural Workers' Union of what is nothing more than a new wage claim, within a few weeks of being awarded increased wages, is something which concerns the horticultural industry and the agricultural industry as a whole.

Horticulturists, already feeling somewhat aggrieved at being passed over at the recent Price Review will view this new demand by the workers with some dismay. With costs of production continually rising and resistance building up at the consumer end, those engaged in horticulture are being subject to a squeeze from both ends, a squeeze which, if carried on, might leave behind it nothing more than a bread and bread sandwich, for those engaged in this joint pressure effort.

True, this new claim by the workers is not actually asking for out and out increased wages but seeks, by devious routes, to achieve that end. This route is via a shorter working week of 44 hours, increased overtime rates and perhaps, most foolish of all, full pay at 20 years of age.

By what process of reasoning those responsible for the guidance of the workers have arrived at the conclusion that they and they alone are entitled to reach their majority a year before anyone else, passes comprehension (one branch of the N.A.W.U. even proposed full pay at 18 years of age!)

So much has, in recent times, been written of the skill employed in the agricultural and horticultural industry that one feels compelled to question whether this alone, if indeed it be strictly true, justifies wage parity with the industrial worker who, year in and year out, performs the same soulless task. Indeed, the industrial worker may well claim that his stoicism deserves the wage differential between himself and the agricultural and horticultural worker.

What certainly does emerge from the present position is the dire necessity for the horticultural industry to stand firmly united in what is rapidly developing into an out and out struggle for existence. Anything that affects the horticultural industry as a whole is of vital importance to those engaged in mushroom growing.

There is an old saying that "Give a man enough rope and he'll hang himself." Well, perhaps the rope now being grabbed will prove enough.

W.R.A.

5 LB./FT. IN DENMARK

Poul Norgaard, of the Copenhagen firm of Peter Jensen, writes to the Editor:

According to *Berlingske Tidende* (17.3.55), our leading newspaper, mushroom growing experiments at the Royal Danish Veterinary & Agricultural College have been highly successful.

A yield of 5 kilograms per square metre (equal to 1 lb./ft.) used to be considered reasonable, but nowadays it must be doubled to meet competition and realise a profit. Danish research, however, has just obtained an average of 24.2 k/m², or 4.95 lb./ft., from eight trial plots.

Professor H. Paludan, head of the College Horticultural Department, has consequently applied to the Finance Committee of the Danish Parliament for the "firm engagement" of Mr. C. Riber Rasmussen, who has been in charge of mushroom research there ever since it began in 1952.

The Professor pointed out that the work demanded a well qualified man who's initiative, vigilance and abilities as leader were called upon 24 hours a day. Of Mr. Rasmussen he said, "*A better qualified leader would not be easily found in Europe: Riber Rasmussen is carrying out his duties in the finest scientific spirit.*" His salary has been £600 p.a.!



PUBLICITY—KEEP IT UP

The attention of all members of the Mushroom Growers' Association—and to non-members into whose hands this publication quite obviously gets from time to time—is called to the following list of

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I have been asked

ABOUT WATERING

By Dr. R. L. EDWARDS

I think nearly all Mushroom Growers would agree that watering is the most critical operation in mushroom growing. The usual directions given to novices, "keep the soil just moist, not too wet and not too dry," are little better than an admission that we really do not know how often and how much watering is needed. Successful watering, which I think is a better term than correct watering, depends on the judgement of the individual grower.

If the directions just quoted are correct they mean that enough water should be given to replace that lost by evaporation in the interval between waterings.

The greatest difficulty, which makes any rule of thumb system useless, is that this amount of water varies greatly according to air conditions in the house. The extreme example of this variation is found in caves where, with temperature usually below 55° F. and Relative Humidity about 95%, very little watering is needed. Occasional light watering in the paths between the beds is usually enough.

Even in houses there is great variation, particularly with the weather. In winter when the heating system is in use, the air is very dry and evaporation from the beds is rapid. Humidity readings may show a fairly high value, but this is often being maintained by evaporation from the beds, evaporation which must be replaced by heavier and more frequent watering.

As an example of these seasonal differences, we measured the evaporation from beds in one house at Yaxley in April and again in July, 1954. The rate of evaporation in April was between two and three times the rate in July, other factors such as casing being similar. In April the houses were being heated, and in July they were not. At both times the house temperature was about 60° F. In really cold winter weather the difference would be even greater.

Unfortunately there are other complicating factors which may affect the amount of water and times of application. Some natural soils are very sensitive to watering and break down quickly if they are at all heavily watered. The two factors known to affect this are the size of the water droplets and the quantity of water applied at a time. Experiments at the National Institute of Agricultural Engineering have shown that large droplets cause much more rapid soil breakdown than smaller ones, and a very fine mist has comparatively little effect. Some care is also necessary with fine mist sprayers because I have seen these used with so much force that the fine mist jets were bruising the mushrooms. In experiments at Yaxley with the Yaxley subsoil we found that under the same conditions of application, the quantity of water applied at one time had an important effect, e.g., 20 gallons per 1,000

sq. ft. applied once a week caused more breakdown of the soil structure than 10 gallons applied twice a week. So that to minimise soil breakdown, watering should be done little and often, with a very fine spray.

However, this practice may cause other difficulties. It is quite often found that watering on mushrooms nearly ready for picking causes discolouration, and in extreme cases it may cause severe attacks of Bacterial Blotch. There is no ready-made solution for these cases.

Difficulties with soil breakdown can be avoided by using peat casings. As long as sufficient depth of casing is used this will stand any reasonable rate of watering. Sphagnum peat needs rather more water than soil under the same conditions; I have not had enough experience with sedge peat to know how it compares in this respect. Although peat is very obliging in what it will stand up to, it sometimes pays to water it carefully, little and often.

I have watched with interest and admiration a good grower bringing on a heavy flush on sphagnum peat from the pinhead stage with a succession of light waterings daily and sometimes twice a day. The time needed for this kind of attention is considerable, and although there is little doubt that it is worthwhile for the results which can be achieved, it is a major part of one man's work. It is therefore worthwhile for any grower on a large scale to find a watering rose or nozzle which will put on as large a volume of water per minute as possible, without injury to the soil structure or to the mushrooms, thus reducing to a minimum the time needed for this job. It is also worthwhile in winter taking all possible measures to reduce the amount of watering needed by maintaining humidity in the air from sources other than the casing.

But whatever is done to ease the difficulties, watering, or rather judging when and how much to water, is one of the most important jobs in mushroom growing; it depends very much on personal judgement and can have an enormous effect on the results obtained.

BRIGHTON EXHIBITION, 5th-6th OCTOBER

Last month's brief announcement that Dr. Sinden and Dr. Hauser of Gassau, Zurich, Switzerland, world famous authorities on mushroom culture, were to lecture at Brighton on the occasion of the Mushroom Industry Exhibition and A.G.M. of the Mushroom Growers' Association, has created widespread additional interest. Accommodation in Brighton has already proved to be unexpectedly difficult. In order to assist members, the MGA Secretary has taken a block reservation of fifteen double rooms at the Hotel Victoria, and applications for this accommodation should be made to the **MGA Secretary** without delay.

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PESSIMISTS—ABOUT FACE !

commands J. E. ADY

How about using the force of correct thinking to add prosperity to the Mushroom Industry?

In my philosophy, confidence in one's self and one's industry makes for courage which prompts the individual to translate conviction to deeds, thereby creating a material effect: in this case success. Lack of confidence and despair likewise set in motion tendencies to encourage failure or adverse conditions.

A material situation cannot be produced without first the existence of thought or mental picture. This natural law of thoughts with deeds producing worldly results is known to work both ways—advantageously or adversely, according to the original thought. To describe such a state in old-fashioned words, one might say, "Faith with works." A writer once put it in seven words: "Courage begets success, as fear begets failure."

Mushroom growers, in particular, must constantly experience these two frames of mind—confidence and despair. Let us consider a hypothetical case: A man feels confident he can make a success of growing mushrooms. He acquires a farm, grows successfully for some time and is well pleased. Then, all around him, he witnesses others in dire trouble, crops ruined by pests or disease. Whilst reflecting upon his own good fortune, he makes a more careful study of these dreads, till doubts creep in. "My boy," he says to himself, "This is too good to be true. Just a matter of time and you'll be in it too. But still, hope for the best and keep your fingers crossed."

The expected happens and our friend is nervous though hopeful. With thoughts a trifle confused, he takes every precaution he can think of and observes for a week or two, or more, anxiously hoping to see an improvement; but matters worsen and he shouts for help. Others rally round, dispel his fears, boost his morale, and he launches a fresh attack on his enemies with his old confidence restored. Hey Presto! Things start improving almost overnight.

From now on, however, the see-saw game is in full swing. Those who maintain or regain confidence each time, carry on; those who do not, fade out.

To those who do not follow my belief but keep an open mind, carry out a detailed analysis and a practical test or two on right thinking.

I now come to the important point that prompted this outburst; the price of mushrooms.

Wherever growers meet one hears warnings of prices on the downward trend with convictions of far worse to come. The alarming thing is that if this kind of reverse effect thinking is sown into the minds of most growers, adverse conditions could result. There seems little doubt that those who believe in future catastrophic prices in our

industry, do it so firmly, that they try to impress it on others. Such convictions could bring about the materialisation of these fears unless a stronger force can counter it, forcing the pendulum in the opposite direction.

Consider this little instance of a thought of a bank manager swinging in the wrong direction and being stopped dead in its tracks. Multiply this several times and we have a strong force in our favour. One day a mushroom grower confounded a bank manager by vigorously contradicting the latter's statement that mushroom prices were too high. The manager's clearly incredulous though expectant look gave our grower friend the impression that this manager was accustomed to growers apologetically agreeing with him. But this new idea shook him and he was all eager to hear more about his mistaken notion.

The object here is to suggest that there might be some growers who think they are in forward gear, though actually in reverse, and that if they check very carefully they may detect the error, thus enabling the industry as a whole to make better progress.

The desired forward gear is the belief that mushroom prices are low—at rock bottom level—and that they ought to be higher. Translated into action, would be to speak this out loud to all salesmen, wholesalers, bankers and public at every opportunity.

The immediate task is to convince those unwitting inviters of falling prices that it might be well to re-examine the position.

I deny that prices are falling. My annual average prices for 1953 and 1954 are a shade higher than those for 1951 and 1952. And rightly so, with costs of labour and materials rising steadily and monotonously. Are we not entitled to corresponding rises? If not, why not?

The percentage of growers forced out of business is perhaps the highest of any business in the country—surely another indication of inadequate margin of profit! Ask any Bank or Building Society if this industry is not at the bottom of their lending lists. Would this be because the price of mushrooms is too high or too low?

Can the investment return compare favourably with that of manufacture on similar capital and with similar well paid managers and directors? Not on your life. Therefore the profit margin is comparatively low. Could the average grower afford to pay a foreman and manager to run the business? No, the profit, if any, wouldn't be worth looking at.

If these and other reasons are believed just, then every word spoken in support of better prices will tend to produce that effect.

Pessimists and Job's Comforters, look back to the opening question and turn about. Let's all unite in levering that price up to a comfortable level, and help lighten the task of those noble members, the Publicity Sub-Committee.

THE FRED. ATKINS ALPHABET-S

Salt. The latest (*sic*) control for parasitic diseases.

Sand. The best proportion of sand to peat as a casing material, according to the MRA Trials in 1953, is 75% sand by weight.

Sanitation. The basis of good growing.

Saprophyte. An organism which feeds on dead organic matter. The mushroom is saprophytic.

Saturation Point. The end of any mushroom exhibition or refresher course.

Sawdust. Dr. Rempe found that sawdust alone was not an entirely satisfactory basis for mushroom composts, but was much improved by adding an equal quantity of chaff.

Sciariid Fly. The larvae of at least five species of Mushroom Fly of the genus *Sciara* have been reported to attack mushrooms. They tunnel up the stalks into the caps. The black head differentiates the Sciariid larva from that of the Phorid.

Science. "My appalling ignorance of physics and science in general looms before me as an unscaleable wall," I confessed in the *Nurseryman & Seedsman* recently.

Scopulariopsis fimicola. This is White Plaster Mould, the competitor or "weed" which comes in with the compost if it is too wet or too alkaline. Probably the post-war improvement in composting technique has been the cause of the striking reduction in its incidence.

Scotland. Everyone seems curious to know how things are working out down under up there.

Secrecy. The oldest mushroom disease.

Sludge. E. J. Holford wrote in the 1946 Mushroom Year Book that "the employment of prepared sludge used in conjunction with electrically heated beds" had given "remarkably interesting results" in mushroom cropping. In 1954, Brantom, Shirley & Co., put on the market an Activator for mushroom composts with a formula closely similar to that of the MRA, using sludge as the source of nitrogen instead of dried blood.

Shelves. A successful method of growing mushrooms without all the turmoil of trays!

Shock Treatment. The last resort of the frustrated grower trying to get beds into crop.

Short Composting. There are several methods whereby the anaerobic section of a stack is reduced to a minimum, or avoided altogether, enabling the duration of composting to be shortened and the shrinkage reduced. But this will be considered by many to be an inadequate, misleading or totally erroneous definition. Very well; short composting is composting for a shorter period than we all used to compost.

Site Contamination. A site can quickly become contaminated if strict hygiene before, during and after cropping is not practised.

Slime Mould. See *Myxomycetes*.

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WORTHING . . . SUSSEX

Small Mushrooms. The strongest clue to the cause of this nuisance may be that it seemed to become a major nuisance only when the Tray System was widely adopted. On the other hand, it may not!

Smell. All mushroom growers are better equipped if they possess a sensitive piff-meter!

Smoke Generators. A quick and effective means of disseminating insecticides in mushroom houses. But be careful to use the correct size and type.

Sodium Alginate. Has anyone ever tried it, to increase the aerating and water-holding capacity of the casing soil?

Soft Mildew. See *Dactylum*.

Soil. A fertile soil teems with fungi, bacteria and innumerable other organisms, but nevertheless has been the usual casing material in this country for a great many years. Once upon a time we thought peat might be a more standard casing

Soil-less Culture. There is no doubt that our mushrooms could be grown in a liquid medium; it has been done with the Parasol Mushroom experimentally. But the cost might be prohibitive, and one would expect a serious loss of flavour.

Soup. One of the first tasks of a Mushroom Growers' Co-operative could be to process our "seconds" and stalks and relieve the markets of these tasty but unattractive price-reducers. But who has the courage to launch this Second/Stem Society for Self Survival?

Spawn. A sterilized medium of compost or grain inoculated with a pure culture of *Psalliota hortensis* and permeated under aseptic conditions—unless you still use bricks.

Spawning. Did you hear the true story of the amateur who gave up mushrooms because his bed "went all mouldy" a fortnight after spawning?

(S—To be continued)

LOOK! SEE? ACT

The Publicity Sub Committee again have pleasure in acknowledging the following additional contributions to the Publicity Fund (to 21st April):—

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*Previous contributions already acknowledged.

†Amounts donated by spawn merchants are not, for obvious reasons, given here.

AN AMERICAN GROWER'S DIARY

By JOSEPH M. MICHAELS, Naperville, Illinois

28th February

It seems strange to me that the literature on mushroom diseases caused by fungi does not follow a taxonomical development like the fungi that cause these diseases. Mycologists tell me that there are around 100,000 species of fungi and at the present time there are 40,000 recognized and named species. They are classified taxonomically as *Phycomycetes*, *Ascomycetes*, the *Fungi Imperfecti*, etc. Each of these classes are divided into a great many families. I would expect to find in a mushroom house that the many different fungous inhabitants would come from many different families of fungi. To me it is most interesting to find that the many fungi which we recognize as diseases come with very few exceptions from just *one* family. Let me review the common fungi of the mushroom grower. I am very much impressed with the fact that phylogenetically they are limited to one family, namely the *Moniliaceae* in the Class *Fungi Imperfecti*.

Here they are:

<i>Mycogone</i>	(Bubble)	Family <i>Moniliaceae</i>
<i>Verticillium</i>	(Spot, Dry Bubble)	" "
<i>Monillia</i>	(White Plaster Mold)	" "
<i>Trichoderma</i>	(Brown Blotch Disease)	" "
<i>Cephalosporium</i>	(mistaken for Bubble)	" "
<i>Penicillium</i>	(One of the Green Molds)	" "
<i>Spicaria</i>	(Vern Astley Disease)	" "
<i>Dactylium</i>	(Cobweb Disease)	" "
<i>Cephalothecium</i>	} (associated with nemas)	" "
<i>Arthrobotrys</i>			
<i>Ramularia</i>	(one of the brown spot fungi)	" "
<i>Oedocephalum</i>		" "
<i>Sporendonema</i>	(Red <i>Geotrichum</i>)	" "
<i>Phymatotrichum</i>	(Light Brown Plaster Mold)	" "
<i>Papulaspora</i>	(Brown Plaster Mold)	" "

This just about exhausts the recognized common fungus enemies of the mushroom house with the exception of *Pseudobalsamia* (Truffle) and *Chaetomium*. These last two are sac fungi in the class *Ascomycetes*.

That the mushroom house enemies should be confined to practically one family, the *Moniliaceae*, is most challenging. The very numerous *Phycomycetes* (thousands of species) are conspicuously absent as recognized pathogens in the mushroom bed. The *Phycomycetes* live in the soil and almost everywhere. How do the Gods of Fungi keep them out of the mushroom house? It is a big enigma. Maybe I can get a rise out of someone who is not afraid to whisper "Biological Control."

10th March

There are generally speaking two kinds of mushroom grower in the Chicago area. One kind are the rather theoretical, the "x over y" chaps; and the other kind are the very practical "pitchfork mechanics." A "combination" of these two categories is rather uncommon. The "x over y" chaps believe always that mushroom growing is a science, and they go about the mushroom business methodically and purposefully. They are alert to learn what they observe in the complex biological environment of the mushroom house. But they sometimes lose sight of such practical things like how much chicken manure to use. They form conclusions which are valid and respected. Most important of all they have the capacity to correct their mistakes. The "pitchfork mechanics" go about their work rotely because, they will tell you, "that's the way we did it years ago, and we got good crops *then*." It is true that they sometimes make neater beds and they pride themselves because there isn't a straw out of place. And interestingly enough they sometimes get as good crops as the "x over y" chaps. And they know that the "x over y" chaps sometimes have poor crops.

The "x over y" kind of grower is eager for new developments (like short composting) in mushroom culture. The "pitchforkman" cannot assimilate new developments because his know-how is superficial and cannot be systematized. But he likes to pretend that he is well informed. He pretends something like this: "I don't use zineb because that's a fungicide; and what's going to stop it from killing the mushrooms if it kills other fungi?" The action of enzymes on the carbamate molecule in zineb is unfathomable to him. I do not belittle a lack of knowledge, but I cannot condone the indifference and contempt that a very "practical" man sometimes has for the way he earns a livelihood. I wish more growers could emulate one man in particular in the Chicago area. He came from Poland with less than an elementary school education. I enjoy a conversation with him. His mushroom knowledge, and his English vocabulary, are without parallel. He has learned that mushroom growing is a science. He possibly is the finest combination of the "x over y" and the "practical" man that I know. And how does he explain his perspective? He says, "In this world where we grow mushrooms for a living neither you nor I can afford to be mediocre."

15th March

We have all seen the fine fungus growth on casing soil of mushroom beds that was overtaken by eelworms. This is the *Arthrobotrys* fungus. I was very interested to read that the *Arthrobotrys* fungus catches nematodes in localized net-like structures of its mycelium. I am growing some of this stuff on a maltose agar in a petri dish. The net-like mycelium 'catches' its eelworms not unlike a spider catches its prey in a spider web. It is fascinating to think that a lowly fungus has invented structures for capturing tiny animals. Another fungus, *Dactylaria*, has eelworm capturing rings which constrict when they come in contact with the eelworm.

17th March

This evening I feel sorry for being presumptuous and intolerant. To-day I was asked by a visitor to my mushroom houses a question that every grower has been asked many times. "How can you tell which are mushrooms and if there are any toadstools among them?" I tried to be polite on the surface but I said to myself that botanically, the words mushrooms and toadstools are synonymous, and are used without discrimination for both edible and poisonous kinds. In my naive little way I always imagined a toad sitting on any mushrooms, and thus I reasoned the origin of the word "toadstool." I hang my head, for I was told by this visitor that the word "toadstool" was derived from the German word "Todesstuhl" which means "death's chair."

1954 IMPORTS OF FRESH MUSHROOMS SLIGHT INCREASE OVER 1953

Figures are now available for the imports of fresh mushrooms from the Irish Republic and France throughout 1954. Rather surprisingly these figures show relatively little change over the previous year.

In 1954, the amount of imports from Eire amounted to 6,303 cwt., an increase of 5 tons 14 cwt. over 1953. France however, showed a drop in exports to this country of 10 tons 18 cwt. and the total imports from these two countries dropped from 6,793 cwt. in 1953, to 6,687 cwt. last year. The value of the Irish imports fell in 1954 to the tune of £4,357.

The table below gives the figures month by month.

IMPORTS OF MUSHROOMS FRESH, 1954

Month	CWT.			£'s VALUE		
	Countries	Total		Countries	Total	
	France	Irish Republic		France	Irish Republic	
JAN. ..	43	691	734	734	12,009	12,743
FEB. ..	34	582	616	638	9,345	9,983
MAR. ..	43	613	656	749	10,856	11,605
APR. ..	34	402	436	637	6,975	7,612
MAY ..	32	401	433	572	6,993	7,565
JUNE ..	30	598	628	532	10,193	10,725
JULY ..	30	486	516	511	8,602	9,113
AUG. ..	24	425	449	466	7,756	8,222
SEPT. ..	25	367	392	472	6,717	7,189
OCT. ..	33	625	658	549	11,927	12,476
NOV. ..	31	655	686	599	11,502	12,101
DEC. ..	25	458	483	534	7,733	8,267
TOTALS	384	6,303	6,687	6,993	110,608	117,601
TOTALS (1953)	604	6,189	6,793		114,965	

A MUSHROOM SOLILOQUY

By ROBERT PATTERSON

Biologically I am one of the lowliest forms of life. I am classed with parasites and my gastronomical tastes are so primitive that I draw my nourishment from decaying vegetable matter. I belong to the Clan Fun Gus and I am looked down upon because I have got no chlorophyll in my veins.

My brothers and sisters are puffballs and toadstools. Some of my relatives are considered to be good-for-nothing poisonous creatures and are disliked and discredited by all mankind. But man is only just beginning to discover the good that is in us. My first cousin Madam Penicillin, for instance, has been active for many generations but only recently has superior man discovered that she can save the lives of more of his friends and relations than any other single living thing. For years brewers and bakers have known the value of my second cousins the Yeasts. Sure it is only within the last dozen years or so that I have been fully appreciated. Before then I was something of a novelty—lords and ladies enjoyed me perhaps chiefly because I was not too plentiful and very expensive and others bought me because they enjoyed my flavour and said it whetted their appetites for food. This weakness was nearly my undoing in times of emergency when man's food was scarce and rationed. If I had dulled appetites instead of whetting them I would have been more popular then. Of course I was looked upon as having no food value and was regarded as something of a luxury. But all the time, unknown to man, I was full of nourishment, vitamins and goodness.

Now that my true value has become known I am naturally very proud and perhaps a little embarrassed by all the publicity that I am being given. I feel just a little sorry for some of my sisters who are just as good as I am but the trouble is that man has not yet discovered the art of cultivating them. In fact he does not know as much as he thinks he does about me either. How much more prolific I could be if only he knew all about my needs. But I am not going to tell him. I have kept him guessing for centuries now and it would be just too easy for him if I told him any secrets. Some of the silly things he does to try to make me crop more heavily fairly make my gills wiggle. He deprives me of water when I am dying of thirst and soaks me right to the toes when I have no need of more moisture. He gets "bees in his bonnet" about ventilation and I am either frozen to death near a wide open ventilator or die of suffocation in some stuffy corner. I am overdosed with fertilizers and insecticides and it is a wonder sometimes that I survive at all.

I have been referred to as "a tricky proposition" but it is only because of my extreme tolerance that I survive the gross mismanagement that I get from time to time.

Man's ambition is to get me to develop into what he calls a medium sized button. To please him I must be upright, free from blemish, have

2

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a pure creamy complexion and last but not least be curvaceous (bless his mundane mind).

My troubles do not cease when I have become the perfect thing which he dreams about, I am graded, packed and transported and after a lot of rough-and-tumble I eventually reach the housewife's table. She is no less ignorant than the others. She picks me up, wipes me thoroughly and then—poor ignorant soul—she proceeds to skin me just as if I was a parsnip or a pig.

Eventually I reach my end and it is with a sigh of relief that I feel those two rows of ivory castles penetrate my immaculate but tortured tissue accompanied by a smacking of lips and a flood of gastric juices that no other foodstuff can produce.



A GERMAN EXPERIENCE

By PETER C. ATKINS

Several months of planning and correspondence culminated in my spending some months in Germany supervising the building and equipping of a small mushroom farm of four houses converted from a long brick building which was available, together with compost shed, bale wetting plant and usual necessary accessories, for Nordwesdeutsche Kraftwerke A. G. Wiesmoor.

As the farm arrangements neared completion I followed up with practical instruction in composting MRA Synthetic, chemical mixing, casing material, peak heat and so forth, and formed their first schedule.

Their grower, whom I was instructing, had had twelve years working on a mushroom farm in France. He was to take over from me at the completion of my twelve weeks agreement.

The highlight of the plant seemed to me to be the specially designed portable peak-heating apparatus, consisting of cast iron tubular electric heaters, on castors, and not too heavy for two men to lift. The unit outside the house, also on castors, carried the switch, signal light, eight connections and automatic cut-out for air and surface temperature of tubes.

During my stay I visited Dr. Rempe at Essen where he very kindly showed me his cave and experiments with no less than 70 different casings and spawns. Some have produced high yields and others low, as is the case with experimentation, but he had recently installed a new air infiltration apparatus which heats the air and controls humidity to some extent. This he believes will give him a better overall yield. His mycologist was good enough to show me male and female eelworm side by side.

At Oberhausen on two occasions the Willekes' fine large caves were shown me and also their canning plant. At the second visit my

wife and I spent two very happy days at their lovely home. No one could have been more kind and entertaining. We were able one afternoon to dash off to see Dusseldorf's famous Komigs Allee. Essen I can only describe as being in bad disrepair since the war.

It was during a journey across Northern Germany that I passed within a few hundred yards of the Russian border—that is Russian Occupied Germany. "Same thing," say the Germans, "for our children are growing up to be Russians." It is very difficult for an Englishman to cross that border and I did not try.

We crossed the Elbe at Stade, then to Neumünster and on to Malente with its beautiful lakes and its Hotel Dick See which took our measure with its comfort. Between there and Lübeck, the home of Marzipan, we saw the Russian border. Leaving Lübeck on the return journey we stopped also at Hamburg with its central lake, and at Bremen and Oldenburg, where we saw the graves of British soldiers, kept very smart and carefully tended.

I can only tell, from heresay, of Russian mushroom cultivation. I am told that they grow mainly in caves and their output per metre is about 4 kg., I think. It is said that at the German National Conference last year several Russian representatives were there and were offering large rewards and rapid advancement for a good Master Grower to raise their yields to an economic level. Well, don't stand there! All volunteers two paces forward!

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CORRESPONDENCE

AYE OR NAY?

I do not wish to offend Mr. André Sarazin, but I really believe that his January Bulletin article was above the heads of the average mushroom grower, and (dare I say it?) I wonder whether it was perfectly clear even to our scientific friends. I hope I am not abnormally un-intelligent, but frankly I am little nearer grasping the contents after perusing them twice, than I was before. I could understand parts at least of the former articles, but this one has some 24 horrific scientific terms!

It does seem a pity that 7 pages of what is no doubt very interesting and probably useful information, should be completely lost (if I'm correct) on all but a few of the growers to whom it is addressed, and I suggest deferentially that future articles, if not past ones also, should be interpreted into Plain English for the benefit of the majority.

As a compromise, would it be possible for a paragraph at the beginning of each article explaining in general mushroom language, what the article is setting out to prove and for a paragraph at the end telling us what it *has* proved?

Also, it might be useful if explanations or diagrams were to be given, explaining why "2 daughters of centrosomes" should be mixed up at the "strepsitene stage" with a "haploid number of centrosomes" and a "palisade of hyphal tips"! Possibly, they come from the "medullary zone (trama)" and are, therefore, "homeotypic"!

Yours, "Sub-hymenium" Leach.

TERENCE LEACH.

TRICKY INDEED

On page 512, Bulletin 63, wanted cultivated mushrooms to **retail** at 4/- to 5/- a lb. all the year round. Last month I read about production of mushrooms from grain spawn in two to three weeks **from date of planting**. This month I read about 2 lb. per sq. ft. in 25 days!

Such growers must have a marvellous yearly balance sheet; they ought to print it in the Bulletin to convince us bad growers.

Last year I read about the Worthing flies and crop failures. The flies are now doing the boasting of lb. per sq. ft.!

As regards crops, our experience is that the flies, cecids, grubs and fungivorous do the boasting of lb. per sq. ft., and not us.

In our district wages, coal, manure, chemicals, baskets, rail, carriage and everything is still rising in price.

Why should the grower get a lower price for mushrooms?

All our baskets leave here containing 3 lb. 2 ozs. of mushrooms invoiced as 3 lb. this allows for any loss in weight to the buyer, **and** we expect to get a **minimum** price of 4/6d. a lb. all the year round when we are successful in getting mushrooms with an outdoor temperature at zero.

We find in cultivating mushrooms we get surprises and great disappointments. It is very tricky and a good "unpredictability" crop.

JOHN BEVERIDGE.

FOLIC ACID

Mr. Gaw recalls in the March Bulletin that an important article on Folic Acid appeared in some journal a few years ago, and suggests "a reprint would do mushrooms a million pounds of good."

Actually the article appeared in the *Penguin Science News* 3, though I have not been able to trace the date. I have given Secretary Alderton a copy of the article, and he should have no trouble in obtaining permission to reproduce, I imagine, if the Publicity Sub-Committee could find a use for it.

The Lancet, the journal of the British Medical Association, carried a long report on "Progress with Folic Acid" in its issue dated 9.11.46 in which it was stated that this important vitamin is found in "mushrooms, liver and yeast" as well as in spinach and many other green leaves, including grass. But this particular article is far too technical to justify reproduction.

FRED. C. ATKINS.

SOUTH AFRICA'S EDIBLE FUNGI

A new book, charmingly illustrated, has been presented to the MGA Library by the Department of Agriculture in South Africa. It is Bulletin 324, entitled "Common Edible and Poisonous Mushrooms in South Africa," by Miss A. M. Bottomely and P. H. B. Talbot.

In an interesting preface, the authors confess that knowledge of edible and poisonous fungi in the Union is still very incomplete, and that probably for this reason, as well as natural prejudice, many South Africans look upon all mushrooms with suspicion.

The Field Mushroom, *Psalliota campestris*, is described as "a species very similar to the Common Mushroom that is extensively cultivated in many countries, including South Africa The name *Agaricus* was originally given to all fleshy fungi with gills, but later, when the members of this genus were divided up according to the colour of their spores, all mushrooms which changed from pink to chocolate brown were included under the name *Psalliota*."

Those growers in Britain who feel strongly that there is no such thing as a "mushroom" which is poisonous, contending that such a fungus is more truly a "toadstool," will be sorry to learn that the authors of this guide have not differentiated between the two terms. While poisonous fungi are often referred to as toadstools, they say it is a fact that "many fungi which would unhesitatingly be classed as toadstools by the majority of people are actually good edible species."

The "majority" is not always right, of course; the "majority" thinks mushrooms are easy to grow, I'm told!

F.C.A.

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MR. A. A. RICHARDS

Mr. A. A. Richards, M.B.E., who, after many years with the Cheshunt Experimental and Research Station, retired and settled down on a nursery only a short time ago, died on Good Friday. He was a well-known writer on glasshouse subjects and he was the author of "Modern Mushroom Cultivation," published earlier this year. His early training was at the John Innes Horticultural Research Station and afterwards he was with Sutton & Sons of Reading. During the 1914-18 War he served with the Royal Veterinary Corps.

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THE "NO WASTE VEGETABLE"

By H. B. LUXMOORE, B.Sc. (Snowcap Mushrooms)

Now that the Publicity Sub-Committee has done the most difficult part of the job, most members (contributors and non-contributors alike) will have opinions as to how the money could best be spent. Or course, not being aware of the exact issues involved or the difficulties that still have to be overcome his or her ideas may have no practical application, but for what they are worth here are one grower's feelings on the subject.

Somewhere it has been said that 95%—or was it 90%?—of all mushrooms sold to-day finish up in the frying-pan or under the grill. Neither the source nor the accuracy of this statement is vouched for but it probably does indicate some general truth. If that is so then it would clearly be unprofitable to direct publicity at the 5% of purchasers who use mushrooms to make delicately-flavoured sauces or gourmet's dishes. The available publicity would much better be directed at the far greater number of people who want a few mushrooms to make the eternal fry-up just a little more interesting.

From what angle can mushrooms be publicised? They are not full of health-giving vitamins. They have no particular effect on the bowels. They are not even very attractive to the uninitiated, particularly when cooked. The only thing that they *have* got is flavour, but either you like them or you don't, and there is not much that can be done to change people's palates. But there are two most sales-promoting facts about the cultivated mushroom which are not generally known and both of them are very attractive points. Firstly, the mushroom is the *no-waste vegetable*. It is the *only* fruit or vegetable on sale in the greengrocer's shop every bit of which can be used. No peeling. Stalks as well as caps. In fact even though they may be a little dear, they are most economical. Secondly, and this point surely has great appeal to the modern housewife, cultivated mushrooms are *ready to use* when they are bought. No preparation—no peelings to be got rid of—no time wasted. All you have to do is to throw a few into the frying-pan or the casserole and they will transform the whole dish.

It is time that we ceased to think of ourselves as the producers of an exclusive and delicious delicacy. Mushrooms nowadays are a commonplace article in the greengrocer's shop. And there is no season for cultivated mushrooms. They will be found on sale in the average shop all the year round. The average person who buys mushrooms nowadays is not the recipe-reader in search of an exotic sauce for a special dinner-party. She cannot afford them more than a few times a year. It is the artisan's wife (who is probably working herself) in the large industrial city looking for a quick, simple and tasty meal for her family. Or the busy flat-dweller who likes to keep a few by her in case of an unexpected visitor.

Let us direct our publicity, not at the public who already buy mushrooms or at those who loathe the sight of them anyway, but at the enormous majority of people who adore them but *think* they can't afford them.

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EXECUTIVE COMMITTEE

The March meeting of the Executive Committee at the Bedford Corner Hotel, Bayley Street, London, was presided over by the Chairman, Capt. G. P. Lawrence. Members present included Mr. G. W. Baker (Vice-Chairman), Messrs. G. V. Allen, Fred. C. Atkins, N. R. Cooper, F. H. Filmer, E. A. Gook, W. A. B. Harding, A. E. Campbell Melville (Scotland), A. G. Pointing, G. V. Reed and Raymond Thompson.

One of the main items of discussion was the suggested initial proposals in connection with financing the industry, as outlined in a previous Bulletin. The Committee, after a long discussion, felt that the industry, as at present constituted, would not welcome the proposals outlined although it was appreciated that certain difficulties were experienced in the matter of mushroom farm finance. It was eventually agreed that the National Farmers' Union Credit Service Unit should be informed that the proposals were not acceptable but that the Committee would bear the proposals in mind and discuss them again if the circumstances demanded it.

Capt. Lawrence reported that Dr. Sinden and Dr. Hauser had accepted the Association's invitation to lecture on the occasion of the Mushroom Industry Exhibition and annual meeting of the MGA at Brighton in October.

It was reported that the 1956 Annual International Conference would take place in Paris. After Mr. Atkins had stated that, at the 1953 conference in Belgium, Germany had forty representatives, France had thirty "and there were only three from England," it was unanimously agreed that further enquiries should be made with a view to the MGA being fully represented at the conference next year.

Among other matters discussed was Publicity, a suggested all-in insurance cover for mushroom farms and the preliminary information on the NFU Marketing and Grading proposals. Further information on the latter is awaited before any decision is made.

GENTLEMEN—YOUR CARDS PLEASE

Whilst the response to the recent request by the Publicity Subcommittee to Grower Members, asking for an estimate of the amount of spawn used in one full year, has been reasonably good, a large number of cards have still to be returned.

The Committee points out to all Grower Members that the return of these cards is of vital importance. Only by obtaining the information required can the Committee hope to reliably estimate the amount of money likely to be received for publicity in a complete year. Please therefore fill in your card without further delay and return it to:—The Secretary, MGA, 45 Bedford Square, London, W.C.1.

The card in question was circulated to Grower Members only.

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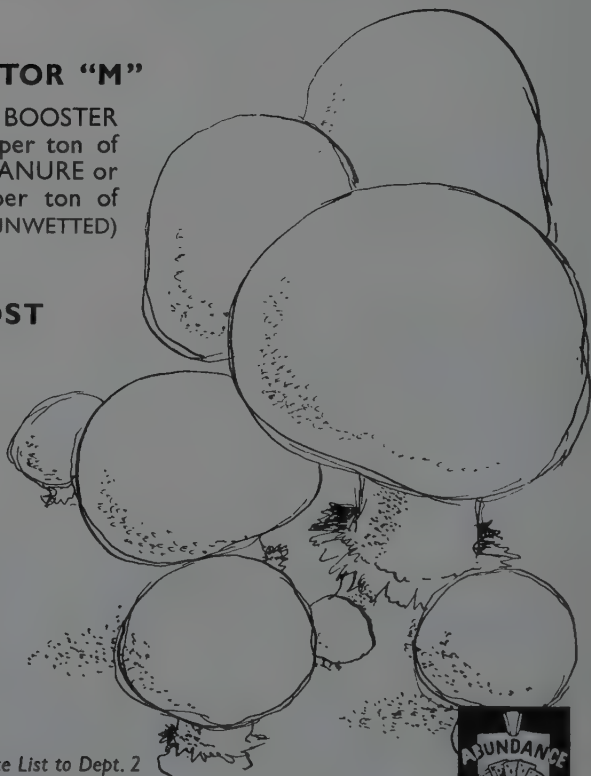
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Our No. 1 BOOSTER
20/28 lbs. per ton of
STABLE MANURE or
3½ cwts. per ton of
STRAW (UNWETTED)

99-9 COMPOST MAKER

Our No. 2
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28/56 lbs.
per ton of
STABLE
MANURE

**BOTH CON-
TAINING
TRACE
ELEMENTS**



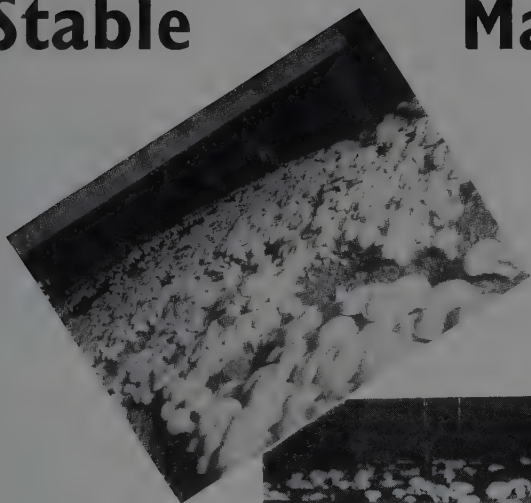
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Stable

Manure



Exclusive
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Delivered by road or rail to any station or farm at reasonable
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Introduced early in the composting, Adco "M" speedily brings racing stable manure to the required condition, thus shortening the time needed for composting

ADCO "M"
IMPROVES MANURE SUPPLIES

● **AS A SYNTHETIC**

When horse manure is not available, wheat straw treated with Adco "M" will provide a compost for mushroom growing.

Particulars & Prices from **ADCO LTD.** HARPENDEN, HERTS



*The name, of course,
does not refer to any
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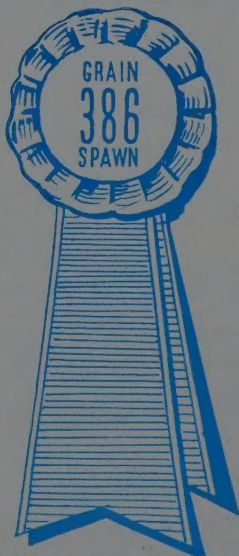
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